

CLAIM AMENDMENTS

1. (previously presented) Electrical system comprising:

a central unit;

more than one node; and

bus arrangement connecting the more than one node and the central unit for transfer of data there between;

the bus arrangement having a single conductor pair;

the central unit comprising a voltage supply arranged to provide a voltage between the conductors in the conductor pair;

the central unit further comprising a voltage modulator, arranged to modulate at least two successive voltage pulses onto the conductor pair representing data to be transferred from the central unit to the more than one node;

whereby a time separation between the successive voltage pulses takes one of n distinct predetermined first values, where $n > 2$, each of the n distinct predetermined values corresponding to a predetermined data quantity;

the more than one node comprising a detector of the modulated voltage pulses or quantities directly related thereto; and

the more than one node further comprising an interpreter, interpreting the detected modulated voltage pulses as transferred data;

the interpreter in turn comprises means for determining the time separation between the successive voltage pulses and means for associating the determined time separation with a corresponding data quantity,

the more than one node further comprising means for creating a current pulse on the conductor pair representing data to be transferred from a respective node to the central unit;

whereby a time separation between the current pulse and the closest preceding voltage pulse takes one of k distinct predetermined values, where $k > 2$, each of the k distinct predetermined values corresponding to a predetermined data quantity; and

the central unit further comprising:

detector for the current pulses;

means for determining the time separation between the current pulse and the closest preceding voltage pulse; and

means for associating, in the central unit, the determined time separation between the current pulse and the closest preceding voltage pulse with a corresponding data quantity.

2. (previously presented) Electrical system according to claim 1, wherein the more than one node are arranged to send data to the central unit within the same time period between two successive voltage pulses.

3. (previously presented) Electrical system according to claim 1, wherein the more than one node further comprise means for extracting electrical power from the voltage between the conductor pair.

4. (previously presented) Electrical system according to claim 3, further comprising a peripheral unit associated with the more than one node, said peripheral unit being connected directly between the conductor pair via only switching means.

5. (previously presented) Method of communication in an electrical system having a central unit connected to more than one node by a common bus arrangement with a single conductor pair, comprising the steps of:

providing a voltage between the conductors in the conductor pair;

modulating, in the central unit, at least two successive voltage pulses on the conductor pair representing data to be transferred from the central unit to the more than one node;

whereby a time separation between the successive voltage pulses takes one of n distinct predetermined first values, where $n > 2$, each of the n distinct predetermined values corresponding to a predetermined data quantity;

detecting the modulated voltage pulses or quantities directly related thereto in the more than one node; and

interpreting, in the more than one node, the detected modulated voltage pulses as transferred data, by the part steps of:

determining the time separation;

associating the determined time separation with a corresponding data quantity,

creating, in at least one of the more than one node, a current pulse on the conductor pair representing data to be transferred from the at least one of the more than one node to the central unit;

whereby a time separation between the current pulse and the closest preceding voltage pulse takes one of k distinct predetermined values, where $k > 2$, each of the k distinct predetermined values corresponding to a predetermined data quantity;

detecting the current pulses in the central unit;

determining, in the central unit, the time separation between the current pulse and the closest preceding voltage pulse; and

associating, in the central unit, the determined time separation between the current pulse and the closest preceding voltage pulse with a corresponding data quantity.

6. (previously presented) Method according to claim 5, wherein the more than one node send data to the central unit within the same time period between two successive voltage pulses.

7. (previously presented) Method according to claim 5, comprising the further step of supplying electrical power to the more than one node from the voltage between the conductor pair.

8. (previously presented) Method according to claim 5, comprising the further step of sending calibration data from the central unit to the more than one node as two voltage pulses having a time separation being distinct in relation to time separations representing other data than calibration data.

9. (previously presented) Method according to claim 8, wherein said time separation representing said calibration data is larger than time separations representing other data than calibration data.

10. (previously presented) Method according to claim 8, wherein said time separation representing said calibration data is situated within a predetermined range.

11. (previously presented) Method according to claim 8, comprising the further step of calibrating a node time reference of at least one of the more than one node based on a measured value of the voltage pulse time separation of said calibration data.

12. (previously presented) Method according to claim 8, wherein the data to be transferred is sent in data frames, whereby the method comprises the further step of synchronizing the start of each data frame to the m:th voltage pulse following a calibration data period.

13. (previously presented) Method according to claim 12, wherein a time separation between the start of two successive data frames is equal to a predetermined synchronizing value, whereby the method comprises the further steps of calibrating node time reference of at least one of the more than one node based on a measured value of the time separation between the start of two successive data frames and additionally based on the predetermined synchronising value.

14. (previously presented) Method according to claim 5, wherein the data to be transferred is sent in data frames, in which at least one data position of data transferred from at

least one of the more than one node to the central unit is assigned as an express data position, whereby at least one of the more than one node sends data associated with an express message in the express data position.

15. (previously presented) Method according to claim 14, wherein at least two of the more than one node send data associated with an express message in the same express data position.

16. (previously presented) Method according to claim 14, wherein said data associated with an express message comprises an identification of the node sending said data associated with an express message.

17. (previously presented) Method according to claim 5, comprising the further step of reflecting data sent from a node to the central unit by data sent from the central unit within the same main period, said data sent from the central unit having a unique correspondence with said data sent to the central unit.

18. (previously presented) Method according to claim 17, comprising the further step of allowing a node originally sending the reflected data to continue sending data within a remaining part of a present frame.

19. (canceled)